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| 10/614,217 | 07/08/2003 | Ellis T. Cha | 2855/97 | 7311 |

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| EXAMINER |
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CHEN, TIANJIE

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| ART UNIT | PAPER NUMBER |
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2627

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/614,217

Applicant(s)

CHA, ELLIS T.

Examiner

Tianjie Chen

Art Unit

2656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 12-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Final Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-9 and 12-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pendray et al (US 6,678,119).

Claims 1 and 9: Pendray et al shows a subambient pressure air bearing slider in Fig. 2 including: a slider body defined by a leading edge 130, an inner and outer edge 132 and 133 extending longitudinally along the slider body, and a trailing edge 131 (Column 4, lines 7 and 8), the slider body including a leading air bearing surface 152 (Column 4, line 28); a leading portion 144 extending from the leading edge of the slider, the leading portion having a first height lower than a height of the leading air bearing surface (Column 4, lines 45-48); a subambient pressure region 146 extending between the leading portion and between the first and second low-profile members 220 and 222 (Fig. 2; column 40-42), the low-profile members having a height that is less than the height of the leading air bearing surface (Column 4, lines 45-48); and a absolute sizes (Column 6, line 11), which inherently includes width, of channel 190 in a latitudinal direction of the slider, and the location (Column 5, lines 28-30) are selected to achieve a predetermined flying height sensitivity to camber (roll) and crowing (pitch) in the slider (Column 6, lines 5-13 and column 5, lines 15-21).

Pendray et al does not specify a width and the location of the side air bearing surface. However, it is obvious that a width of the recessed portion of a side bearing surface 154, which is referred as the width of the portion recessed along axis 134 as indicated by the mark 204 is equal to the width of the channel 190; and the location of 190 also determines the placement of the side air bearing surface of 154. As far as the width and the location of 190 are selected, the width and the placement of the recessed portion of the side bearing surface are selected.

Claims 2 and 18: Pendray et al shows that the height of the first and second low-profile members is equal to the first height (Column 4, lines 45-48 and column 6, lines 24-26).

Claims 3 and 19: Pendray et al shows that the slider is to be used in an ultra low flying height environment for a disk drive (Column 2, lines 9-11).

Claims 4 and 20: Pendray et al show a trailing air bearing surface 162 (Column 4, line 59) including a first rectangular portion facing the leading edge of the slider and a second rectangular portion facing the trailing edge of the slider (Fig. 2).

Claims 5 and 21: Pendray et al show that in one embodiment the slider 110 has a width of 1.01 mm (40 mils) and other large and small slider sizes can also be used (Column 4, lines 10-15). One of ordinary skill in the art would have been reasonably expecting the second rectangular portion has a width of less than approximately 30 mils.

Claims 6 and 22: Pendray et al does not specifically show that the second rectangular portions have a width of approximately 5 mils.

However, Applicant does not show unexpected results resulted from the particular width of 5 mils, not 4 or 6 mils. One of ordinary skill in the art would

Art Unit: 2656

have found a suitable width from experimentation and optimization. As taking the size suggested by Pendray into account, one of ordinary skill in the art would have been expecting the results from the experimentation would include the width of approximately 5 miles.

Claims 7 and 23: In Pendray et al's device, width of the second rectangular portion is inherently limited to mask alignment tolerances in photolithographic process to manufacture the slider.

Furthermore, a "product by process" claim is directed to the product per se, no matter how actually made, see In re Hirao, 190 USPQ 15 at 17 (footnote 3 CCPC, 5/27/76); In re Brown, 173 USPQ 685 (CCPA 5/18/72); In re Luck, 177 USPQ 523 (CCPA, 4/26/73); In re Fessmann, 180 USPQ 324 (CCPA, 1/10/74); In re Thorpe, 227 USPQ 964 (CAFC, 11/21/85). The patentability of the final product in a "product by process" claim must be determined by the product itself and not the actual process and an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Therefore, the limitation of "limited to mask alignment tolerances in photolithographic process to manufacture the slider" is process related and will not gain weight in determining patentability.

Claims 8 and 24: Pendray further shows a read/ write element 164 (Column 4, lines 63-64), wherein the second rectangular portion is disposed over the read/ write element.

Claim 12: the above described Pendray et al's device includes a method of designing a subambient pressure air bearing slider including a slider body defined by a leading edge, an inner and outer edge extending longitudinally along the slider body,

Art Unit: 2656

and a trailing edge, the slider body including a leading air bearing surface and a leading portion extending from the leading edge of the slider, the leading portion having a first height lower than a height of the leading air bearing surface, the method including: selecting a width, in a longitudinal direction for the slider body, of a side air bearing surface and a position for the side air bearing slider to achieve a predetermined flying height sensitivity to crowning in the slider.

Claim 13: the above described Pendray et al's device the width in the longitudinal direction for the slider body, of a trailing air bearing surface is selected to achieve the predetermined flying height sensitivity to crowning in the slider (Column 3, lines 61-67).

Claim 14: the above described Pendray et al's device inherits selecting a width, in a lateral direction for the slider body, of the side air bearing surface to achieve a predetermined flying height sensitivity to camber in the slider.

Claim 15: the above described Pendray et al's device, the flying height sensitivities to crown and camber offset each other for the slider (Column 3, lines 60-65).

Claim 16: the above described Pendray et al's device includes positioning two low-profile members behind the leading air bearing surface and the leading portion to define a subambient pressure region.

Claim 17: the above described Pendray et al's device the trailing air bearing surface includes a leading rectangular portion and a trailing rectangular portion, the method further including: selecting a width, in the lateral direction for the slider body, of the trailing rectangular portion of the trailing air bearing surface to achieve a desired flying height for the slider.

Art Unit: 2656

Claim 25/9: Pendray et al shows a subambient pressure air bearing slider in Fig. 2 including: a slider body defined by a leading edge 130, an inner and outer edge 132 and 133 extending longitudinally along the slider body, and a trailing edge 131 (Column 4, lines 7 and 8), the slider body including a leading air bearing surface 152 (Column 4, line 28); a leading portion 144 extending from the leading edge of the slider, the leading portion having a first height lower than a height of the leading air bearing surface (Column 4, lines 45-48); a subambient pressure region 146 extending between the leading portion and between the first and second low-profile members 190 and 192 (Fig. 2; column 40-42), the low-profile members having a height that is less than the height of the leading air bearing surface (Column 4, lines 45-48); and an absolute size (Column 6, line 11), which inherently includes width, of channel 190 in a latitudinal direction of the slider is selected to achieve a predetermined flying height sensitivity to camber (roll) and crowing (pitch) in the slider (Column 6, lines 5-13 and column 5, lines 15-21); wherein the low-profile members are not air bearing surface.

Pendray et al does not specify a width of the side air bearing surface. However, it is obvious that a width of the recessed portion of a side bearing surface 154, which is referred as the width of the portion recessed along axis 134 as indicated by the mark is equal to the width of the channel 190. As far as the width of 190 is selected, the width of the recessed portion of the side bearing surface is selected.

Response to Arguments

2. Applicant's arguments filed 03/01/2006 have been fully considered but they are not persuasive for the following reason.

Art Unit: 2656

- Applicant argues in p.9 that the term “camber” recited in claim 1 should be interpreted as “*curvature* characteristics of the slider.” If so, the last few lines in claim 1 should be read as “a width of a side air bearing surface in a latitudinal direction of the slider is selected to achieve a predetermined height sensitivity to the *curvature* in the slider.” The feature of “sensitivity to the curvature in the slider” does not make any sense and was not disclosed in the specification. However, Applicant mentioned the relationship between the rolling motion and the flying height in “Background of the Invention” section in Specification. It is well known in the art that as the slider rolls around a longitudinal axis, any point on the slider draws a curve, which is considered as “camber” and in Specification p. 9 Applicant has also used the term “Camber sensitivity” to discuss the effect of the rolling motion to flying height. It is clearly that the term “sensitivity to camber” in claim 1 should be interpreted as Examiner’s interpretation recited in previous and this office action. So for the term “sensitivity to crowing.”
- Rejection maintains.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and

Art Unit: 2656

any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TIANJIE CHEN
PRIMARY EXAMINER